

WHAT IS CLAIMED IS:

1. A differential inductor comprising:
  - 5 a first conductive path lying in a first plane having a first portion coupled to a first port and a second portion coupled to a second port;
  - a second conductive path lying in a second plane spaced apart from the first plane, having a first portion, a second portion, and a third portion; and
  - a third conductive path and a fourth conductive path each lying in a third plane
  - 10 spaced apart from the first plane and second plane;
  - said first portion of said first conductive path configured to receive a signal through the first port and couple the signal to the first portion of said second conductive path on said second plane,
  - said first portion of said second conductive path configured to couple the signal to
  - 15 the third conductive path on said third plane,
  - said third conductive path configured to couple the signal to said second portion of said second conductive path on said second plane,
  - said second portion of said second conductive path configured to couple the signal to said fourth conductive path on said third plane,
  - 20 said fourth conductive path configured to couple the signal to the third portion of said second conductive path on said second plane, and
  - said third portion of said second conductive path configured to couple the signal to the second portion of said first conductive path.
- 25 2. The differential inductor of Claim 1, wherein said first plane is substantially parallel to said second and third planes.
3. The differential inductor of Claim 1, wherein said first, second, third, and fourth conductive paths comprise metal windings.
- 30 4. The differential inductor of Claim 1, wherein said conductive paths couple said signal to each other conductive path with electrically conductive pathways formed between each plane.

5. The differential inductor of Claim 1, wherein said first portion of said first conductive path comprises a portion of an outer winding and an inner winding electrically coupled.

5 6. The differential inductor of Claim 1, wherein said first portion of said second conductive path comprises a portion of an outer winding and a portion of an inner winding electrically coupled.

7. The differential inductor of Claim 1, wherein said second portion of said  
10 first conductive path comprises a portion of an outer winding.

8. The differential inductor of Claim 1, wherein said second portion of said second conductive path comprises a portion of an inner winding.

15 9. The differential inductor of Claim 1, wherein said third portion of said second conductive path comprises a portion of an outer winding.

10. The differential inductor of Claim 1, wherein said second portion of said first conductive path is configured to receive a signal through the second port and couple  
20 the signal to the third portion of said second conductive path on said second plane,

said third portion of said second conductive path configured to couple the signal to the fourth conductive path on said third plane,

said fourth conductive path configured to couple the signal to the second portion of said second conductive pathway on said second plane,

25 said second portion of said second conductive path configured to couple the signal to the third conductive path on said third plane,

said third conductive path configured to couple the signal to the first portion of said second conductive path on said second plane, and

30 said first portion of said second conductive path configured to couple the signal to the first portion of the first conductive path on said first plane.

11. A method for forming a differential inductor comprising:  
forming a first conductive path lying in a first plane having a first portion coupled to a first port and a second portion coupled to a second port;

forming a second conductive path lying in a second plane spaced apart from the first plane having a first portion, a second portion and a third portion; and

forming a third conductive path and a fourth conductive path each lying in a third plane spaced apart from the first plane and second plane;

5       said first portion of said first conductive path configured to receive a signal through the first port and couple the signal to the first portion of said second conductive path on said second plane,

      said first portion of said second conductive path configured to couple the signal to the third conductive path on said third plane,

10       said third conductive path configured to couple the signal to said second portion of said second conductive path on said second plane,

      said second portion of said second conductive path configured to couple the signal to said fourth conductive path on said third plane,

      said fourth conductive path configured to couple the signal to the third portion of 15 said second conductive path on said second plane, and

      said third portion of said second conductive path configured to couple the signal to the second portion of said first conductive path.

12.     A differential inductor system comprising:

20       a substrate including semiconductor technology; and  
      an inductor including:

      a first conductive path lying in a first plane having a first portion coupled to a first port and a second portion coupled to a second port;

      a second conductive path lying in a second plane spaced apart from the first plane, 25 having a first portion, a second portion, and a third portion; and

      a third conductive path and a fourth conductive path each lying in a third plane spaced apart from the first plane and second plane;

      said first portion of said first conductive path configured to receive a signal through the first port and couple the signal to the first portion of said second conductive 30 path on said second plane,

      said first portion of said second conductive path configured to couple the signal to the third conductive path on said third plane,

      said third conductive path configured to couple the signal to said second portion of said second conductive path on said second plane,

said second portion of said second conductive path configured to couple the signal to said fourth conductive path on said third plane,

said fourth conductive path configured to couple the signal to the third portion of said second conductive path on said second plane, and

5        said third portion of said second conductive path configured to couple the signal to the second portion of said first conductive path.